

Claims:

1. A method of maintaining consistent group membership data at a Designated Router executing the Protocol Independent Multicast (PIM) protocol including  
5 the steps of:

receiving, at the Designated Router, an IGMP membership message from an IGMP host operating according to the Internet Group Multicast Protocol (IGMP) protocol;

10 translating the IGMP membership message into a PIM membership message; and

selectively forwarding the PIM membership message to a device upstream from the Designated Router.

2. The method according to claim 1, wherein the step of selectively forwarding  
15 further includes the steps of:

determining whether the designated router is upstream from the host device; and

responsive to a determination that the designated router is upstream from the host device, modifying an entry in a PIM routing table associated with the  
20 IGMP host responsive to the IGMP membership message.

3. The method according to claim 2, wherein the IGMP membership message indicates that a member is joining a multicast group, and the step of modifying

includes the step of generating and storing a PIM entry in a multicast routing table responsive to information in the IGMP membership message.

4. The method of claim 1, wherein the IGMP membership message is a Report message, including an identifier and network interface for a member of a group, and where the step of translating translates the Report message into a PIM Join message.
5. The method of claim 1, wherein the IGMP membership message is a Leave message, indicating an identifier and network interface for a member leaving a group, and wherein the step of translating converts the Leave message to a PIM Prune message.

6. A method of maintaining consistent group membership data at a Designated Router executing the Protocol Independent Multicast (PIM) protocol including the steps of:

receiving, at the Designated Router, an IGMP membership message from an IGMP Host device operating according to the Internet Group Multicast Protocol (IGMP) protocol;

determining whether an entry in a PIM routing table corresponds to information in the IGMP membership message;

translating the IGMP membership message into a PIM membership message; and

selectively forwarding the PIM membership message to a device upstream  
from the Designated Router.

7. The method of claim 7, wherein the step of selectively forwarding the PIM  
5 membership message operates in response to whether the entry exists in the  
routing table and in response to whether the designated router is upstream  
from the IGMP Host device.
8. The method of claim 7, wherein the IGMP protocol message indicates that a  
10 member is leaving a group, and wherein the PIM membership message  
indicates removal of the member from the group, and wherein the method  
further includes the step of delaying removal of the member from the group at  
the designated router for a predetermined time period.
- 15 9. The method according to claim 7, wherein the designate router forwards the  
PIM membership message on the network interface on which the IGMP  
membership message is received.
10. A method of maintaining consistent group membership data at a Router  
20 executing the Protocol Independent Multicast (PIM) protocol including the  
steps of:  
receiving a PIM membership message on a first interface, the  
membership message identifying a (source,group) pair;

searching a multicast routing table to determine whether an entry  
corresponding to the (source,group) pair and associated with a coupled  
IGMP Host is stored in the multicast routing table; and

selectively processing the PIM membership message responsive to  
whether the entry is stored in the routing table.

11. The method according to claim 10, further responsive to whether the PIM  
membership message is addressed to the Router.

12. The method according to claim 11, further including the step of only  
forwarding the PIM membership message if the PIM message is addressed to  
the Router and an entry is stored in the routing table.

13. The method according to claim 10, further including the step of determining  
whether the IGMP Host is downstream from the Router.

14. The method according to claim 10, further including the step of suppressing  
forwarding of the PIM membership message in response to the entry being  
stored in the routing table and the IGMP Host not being downstream from the  
Router.

15. The method according to claim 10, further including the step of forwarding of the PIM membership message in response to the entry being stored in the routing table and the IGMP Host being downstream from the Router.

5 16. A router comprising:

a routing table, the routing table including at least two entries including information for forwarding PIM multicast messages;

a network interface for receiving messages from a neighboring device, the messages including IGMP Host messages;

10 translation logic for converting IGMP Host messages received from the network interface to PIM messages; and

forwarding logic for selectively forwarding the translated PIM messages to neighboring upstream devices.

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